



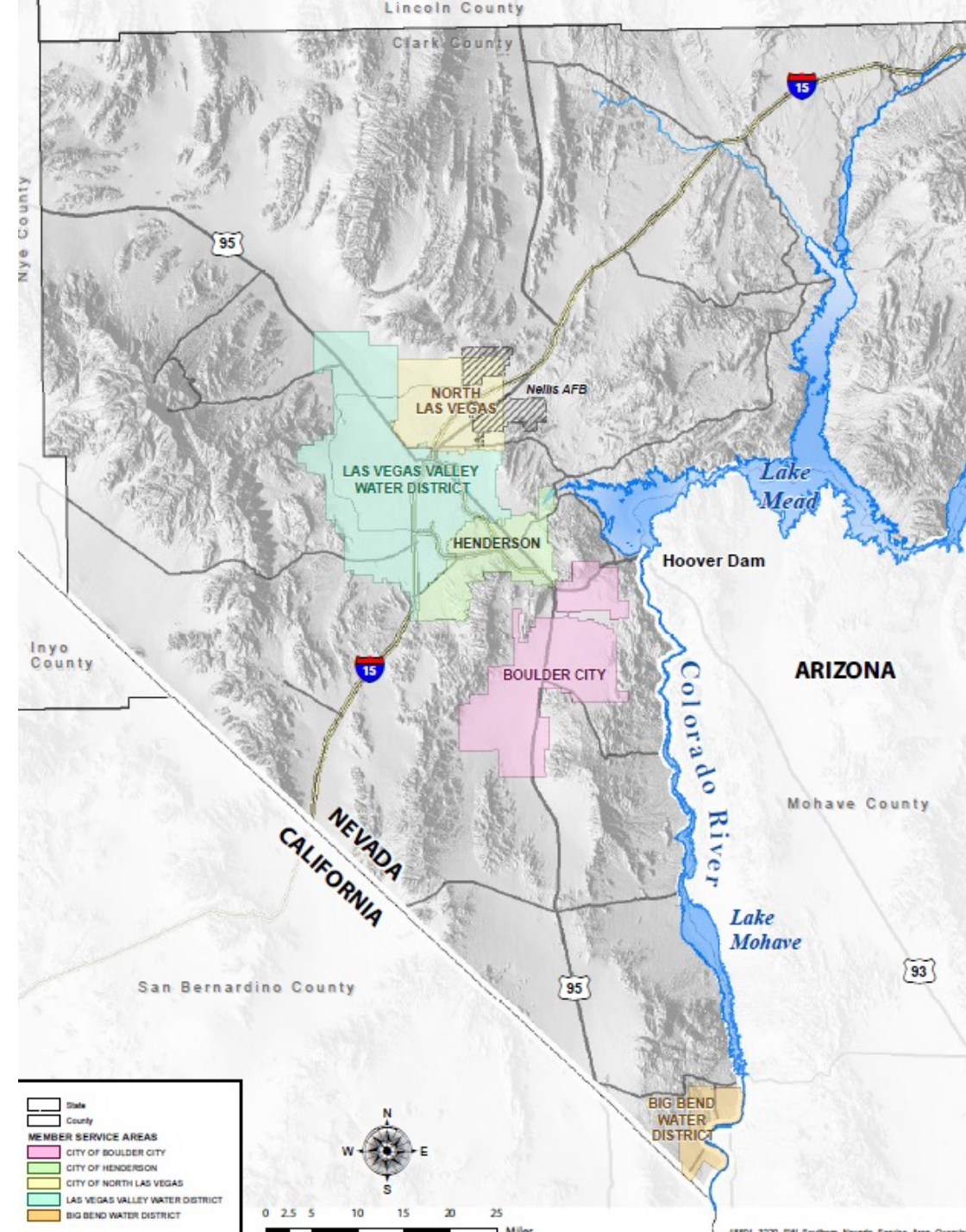
All In: Confronting Southern Nevada's New Water Reality

Colby N. Pellegrino
Deputy General Manager - Resources
Southern Nevada Water Authority

ABOUT SNWA

The Southern Nevada Water Authority is a regional entity whose members include Southern Nevada's water and wastewater agencies.

- Big Bend Water District (Laughlin, NV)
- City of Boulder City
- City of Henderson
- City of Las Vegas
- City of North Las Vegas
- Clark County Water Reclamation District
- Las Vegas Valley Water District



RESPONSIBILITIES



CONSERVATION

Incentives, Programs,
Regulation and Pricing



WATER SUPPLY PLANNING

Developing and managing
regional water supplies



WATER QUALITY

Maintaining and protecting
water quality



INFRASTRUCTURE

Building and operating
major facilities

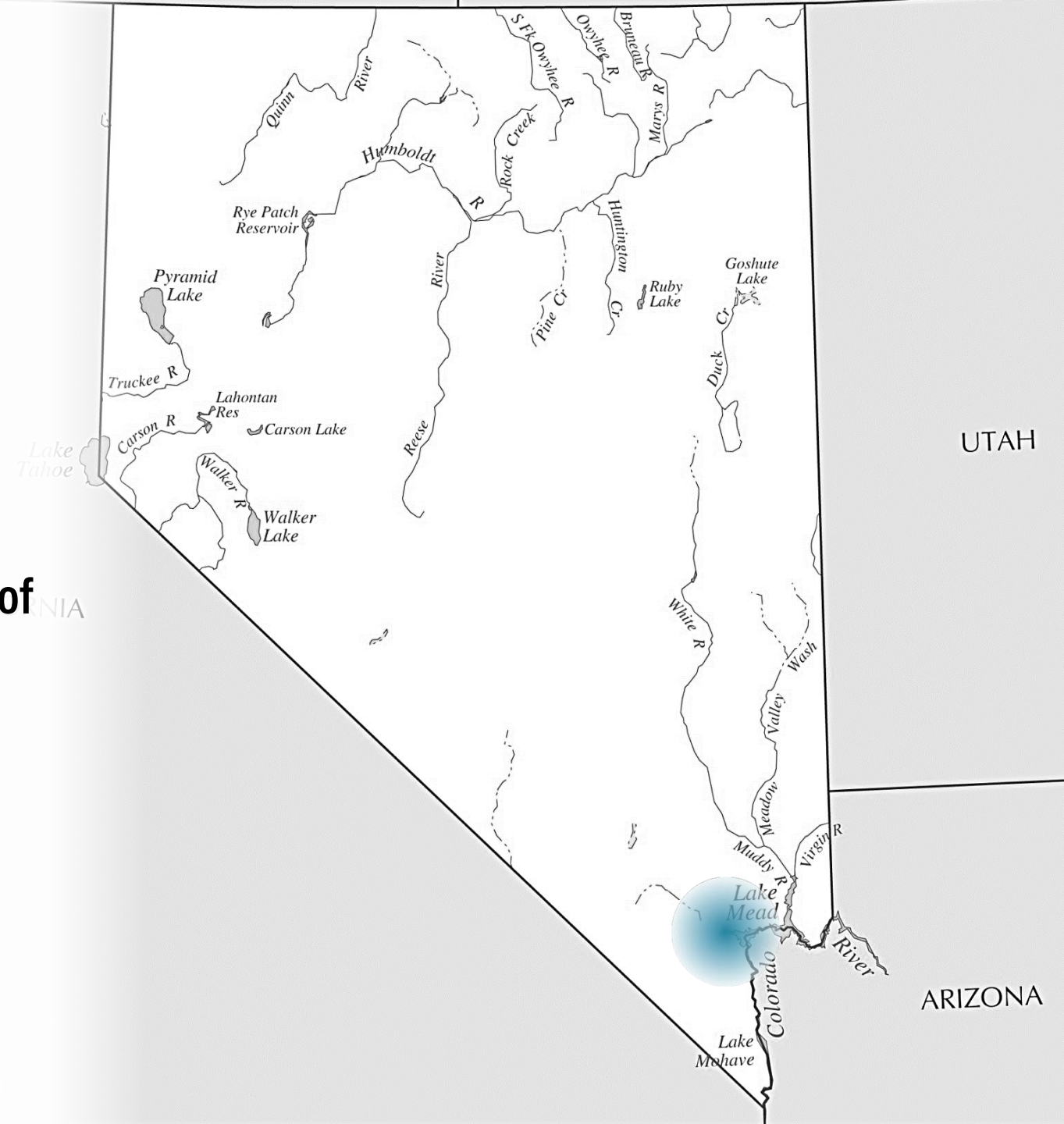


STEWARDSHIP

Protecting
environmental resources

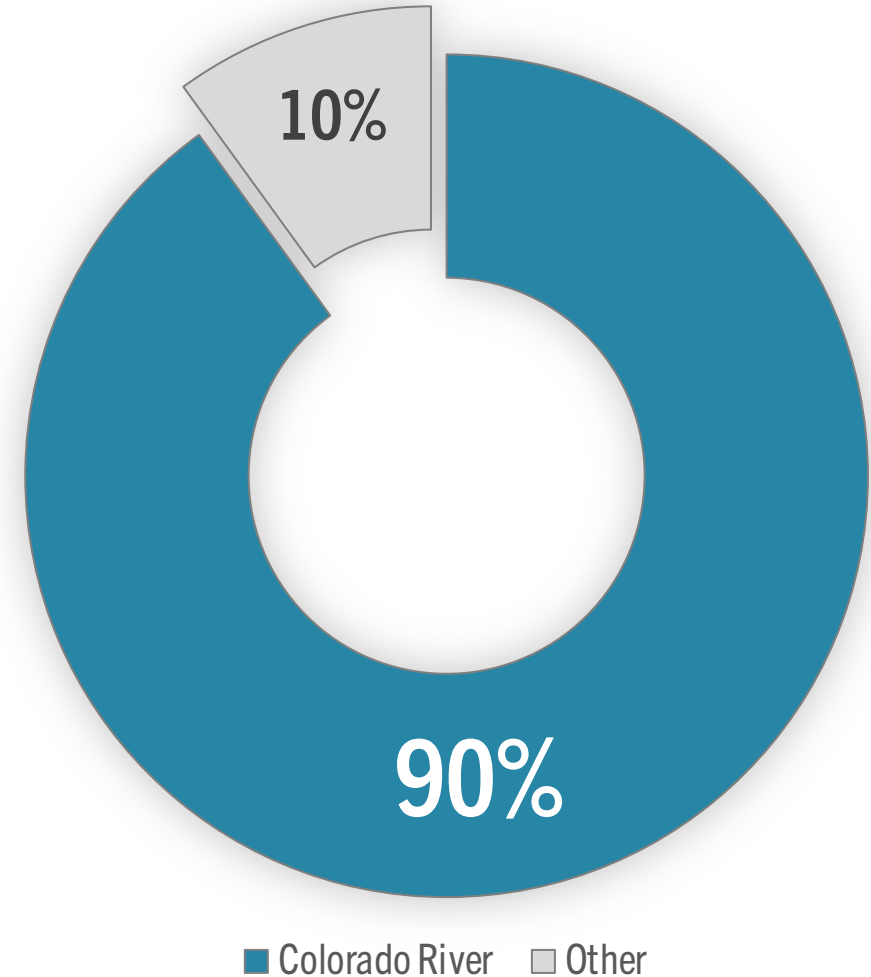
SOUTHERN NEVADA

- 2.3 million residents
- Dry, arid landscape
- Less than 4 inches of rainfall a year
- Relies on Colorado River to meet 90 percent of supplies
- Water used indoors is returned to Lake Mead
- 60% of water deliveries = outdoor irrigation



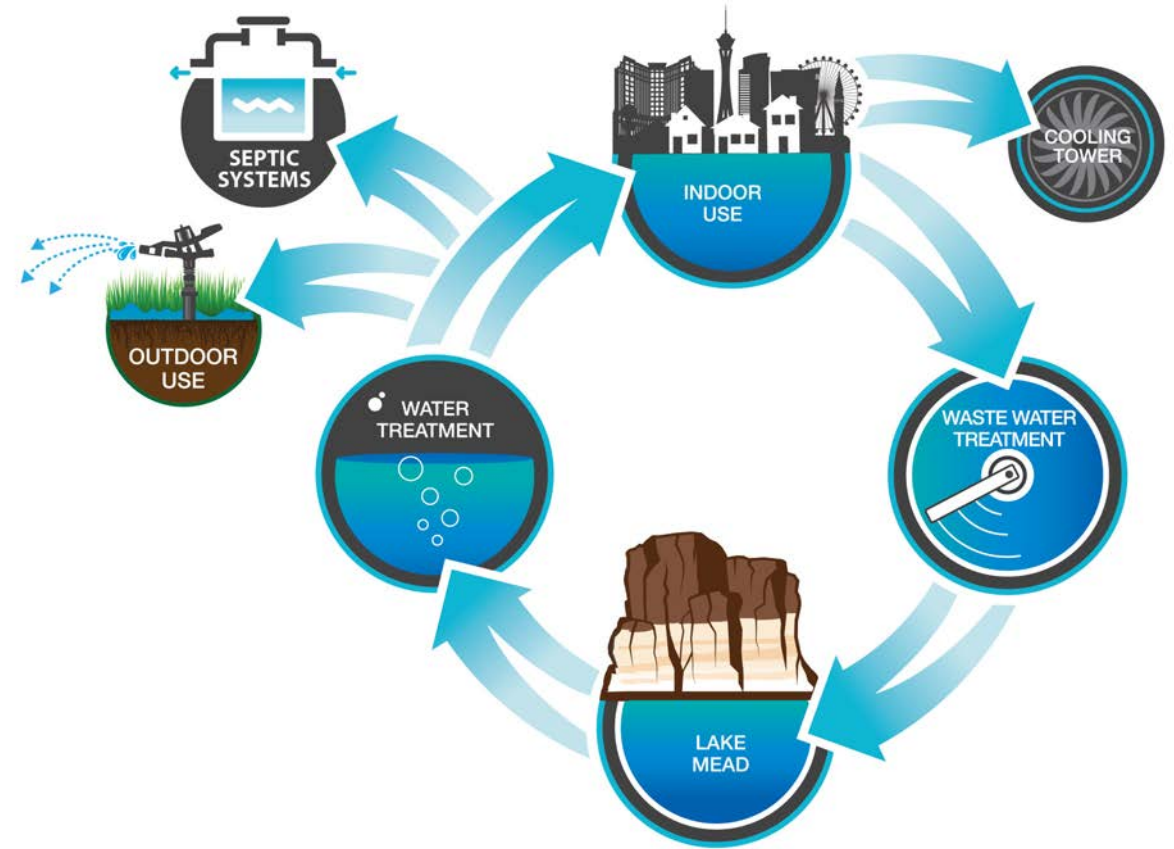
WATER RESOURCES

Southern Nevada is nearly fully reliant on the Colorado River to meet the community's water demands.



RETURN FLOWS

Southern Nevada recycles 99% of water used indoors, thereby extending the availability of its resources.

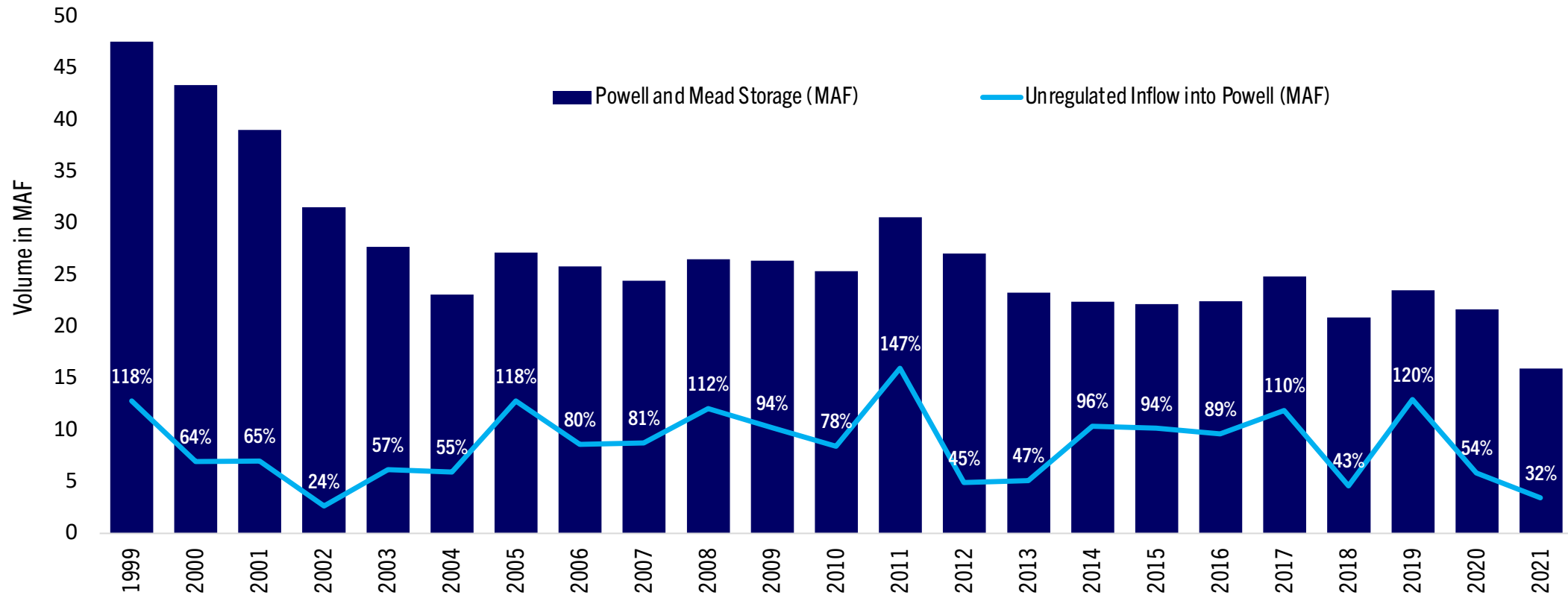


An aerial photograph of a densely packed suburban residential neighborhood. The houses are mostly single-story with light-colored roofs and walls, arranged in a grid-like pattern with winding streets. A prominent road runs horizontally across the middle of the image. The overall scene is bright and clear, suggesting a sunny day. A large, semi-transparent black box is overlaid on the center of the image, containing the text "Facing the Challenge" in a bold, white, sans-serif font.

Facing the Challenge

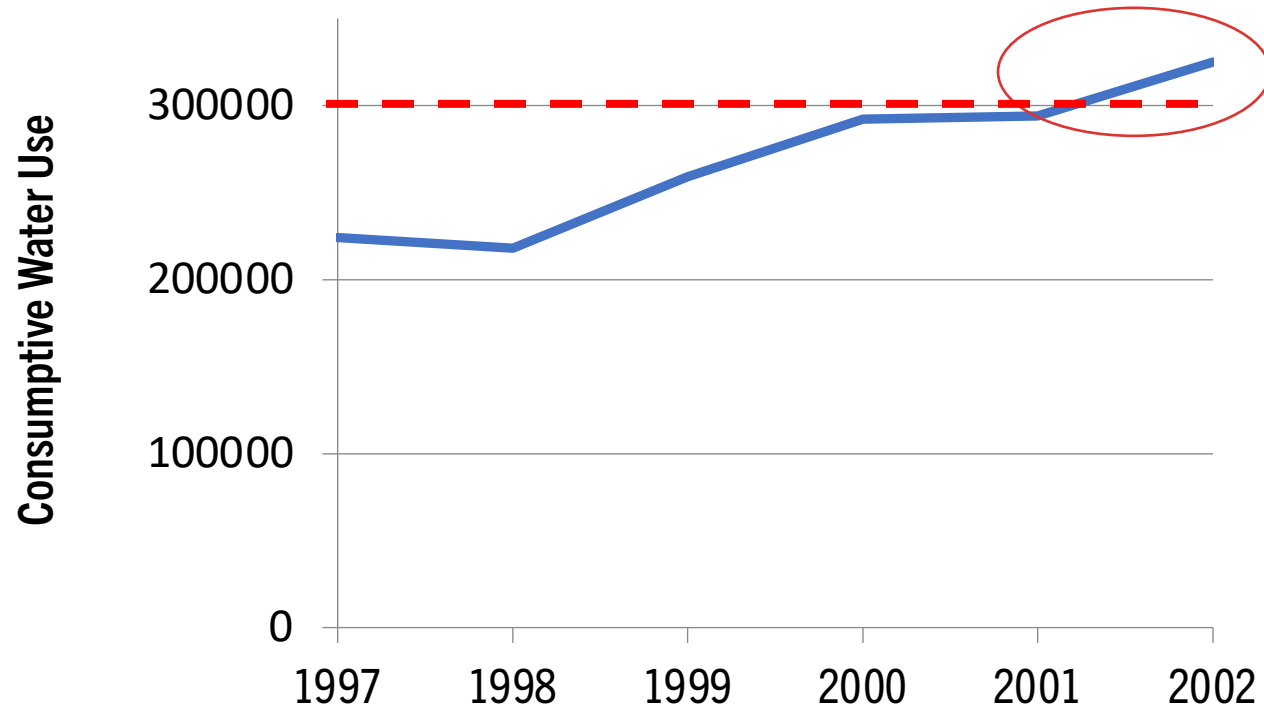
INFLOWS

Beginning in the early 2000s, significantly decreased inflows have led to declines in Lake Powell and Lake Mead elevations.



DROUGHT

The community was exceeding its Colorado River allotment.



DROUGHT RESPONSE

Drought response required four major efforts for the SNWA:

- Reducing demands/water conservation
- Colorado River negotiations
- Securing alternate supplies
- Addressing infrastructure needs



DROUGHT RESPONSE

In 2002, the SNWA initiated a drought planning process.

The process resulted in a comprehensive plan to reduce water demands, which led to interim and permanent changes to how the community uses water.



DROUGHT RESPONSE

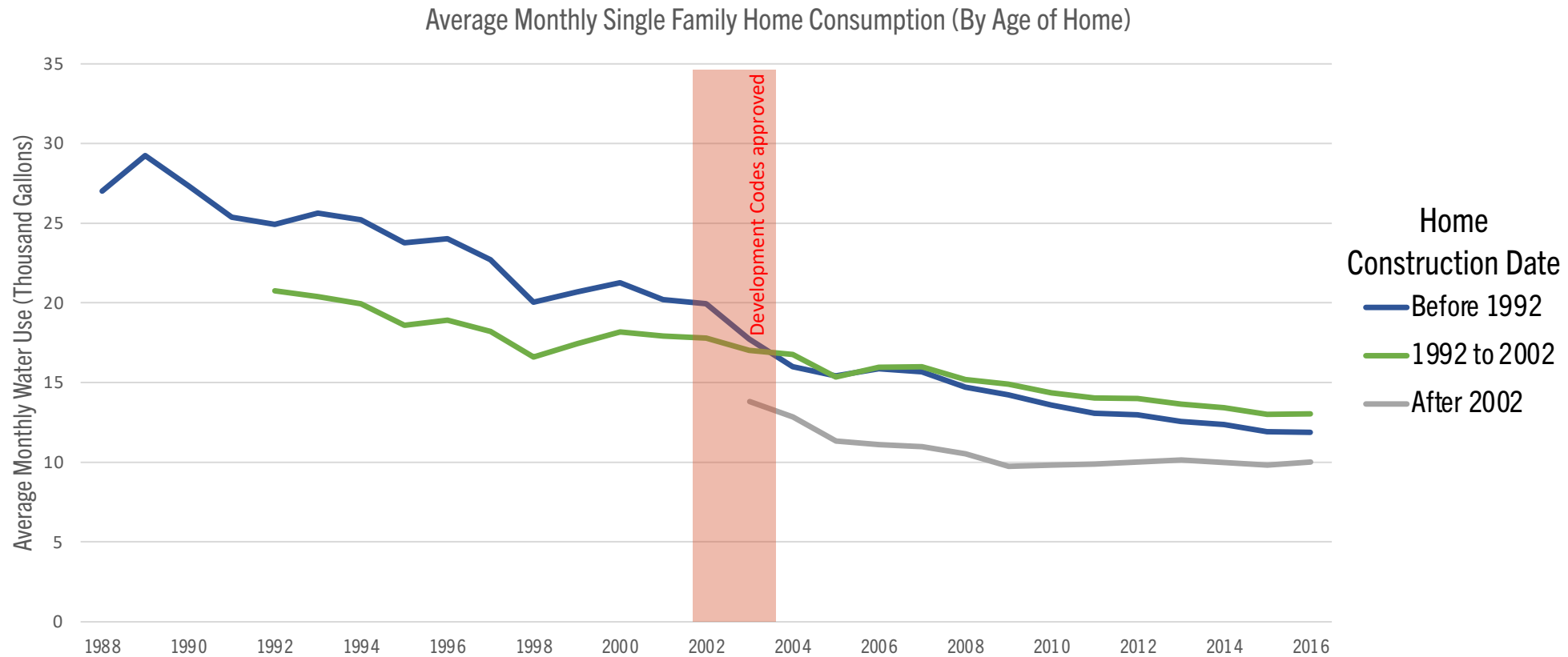
Landscape development codes were enacted.

- Turf prohibited in front yards
- Turf limited to 50 percent of backyards
- Turf prohibited in commercial/industrial applications
- Turf prohibited in streetscapes



DEVELOPMENT REGULATIONS

The introduction of development regulations prohibiting turf in front yards and limiting to 50% of backyards made our community more sustainable.



DROUGHT RESPONSE

Golf courses were put on water budgets.

- Subject to water budgets based on irrigated acreage
- Assessed surcharges if over watered
- Golf courses are one of the largest sector participants in the Water Smart Landscapes Program



DROUGHT RESPONSE

**Mandatory watering schedules
put into effect.**

Winter: 1 day/week

Spring/Fall: 3 days/week

Summer: 6 days/week

...And never on Sunday



DROUGHT RESPONSE

Water waste enforcement helps remind individuals to conserve water.

- Enforced by municipalities
- Assessed increasing fees on water bills



DROUGHT RESPONSE

Water bills were designed to incentivize conservation

- Most Southern Nevadans pay water rates in 4-tiered blocks
- Water users in the highest tier are assessed more than \$5 for every 1,000 gallons used

Las Vegas Valley Water District
(800) 252-2011 (702) 870-4194
lvvwd.com Page 1 of 2

Customer Name: LAST, FIRST
Account Number: 0123456789-1
Billing Date: 02/26/2019
Due Date: 03/23/2019

Assigned watering groups are shown next to EACH service. See page 2 for assigned watering days.

Account Summary
Previous Balance 0.00
Payment(s) Received 0.00
Current Charges 61.79
Bill Corrections and Adjustments 0.00
Late Charges 0.00
Amount Due on 03/23/2019 61.79

Service Address: 123 SAMPLE STREET

Meter #	Size	Current Reading	Current Read Date	Previous Reading	Previous Read Date	Usage in 1000 Gallons
0466216	3/4"	872	02/25/19	858	01/31/19	14

This service is in Watering Group E

Billing Period: 02/01/19 - 02/25/19
Meter #: 0466216

Charge Description	Amount	Total # of Days Billed Usage
Service Charge \$0.4250 x 30 Days	12.75	30
Tier #1 8 x \$1.28	7.68	14
Tier #2 5 x \$2.28	11.40	
Tier #3 3 x \$3.40	10.20	
SNWA Commodity Charge 14 x \$0.48	6.72	
SNWA Infrastructure Charge 30 x \$0.4306	12.92	
SNWA Reliability Surcharge x 0.25%	0.12	
Subtotal	\$61.79	

Bar Chart: Average Daily Use in Gallons
Y-axis: 0 to 2570 Gallons
X-axis: Meter Read Date (Feb to Feb)
Previous Billing Period: 471 Gallons
This Billing Period: 483 Gallons

Payment Information:
Check box for address change. Print on reverse side.
Pay by Phone or Internet: (800) 252-2011 (702) 870-4194 lvvwd.com
Account Number: 0123456789-1
Your payment is due 03/23/2019. Amount Due: \$61.79
A 4% late charge will be charged on all outstanding balances.
Make check payable to "Water District"
LVVWD
PO BOX 2921
PHOENIX, AZ 85062-2921

0123456789000000000000000000000000000000000123456

DROUGHT RESPONSE

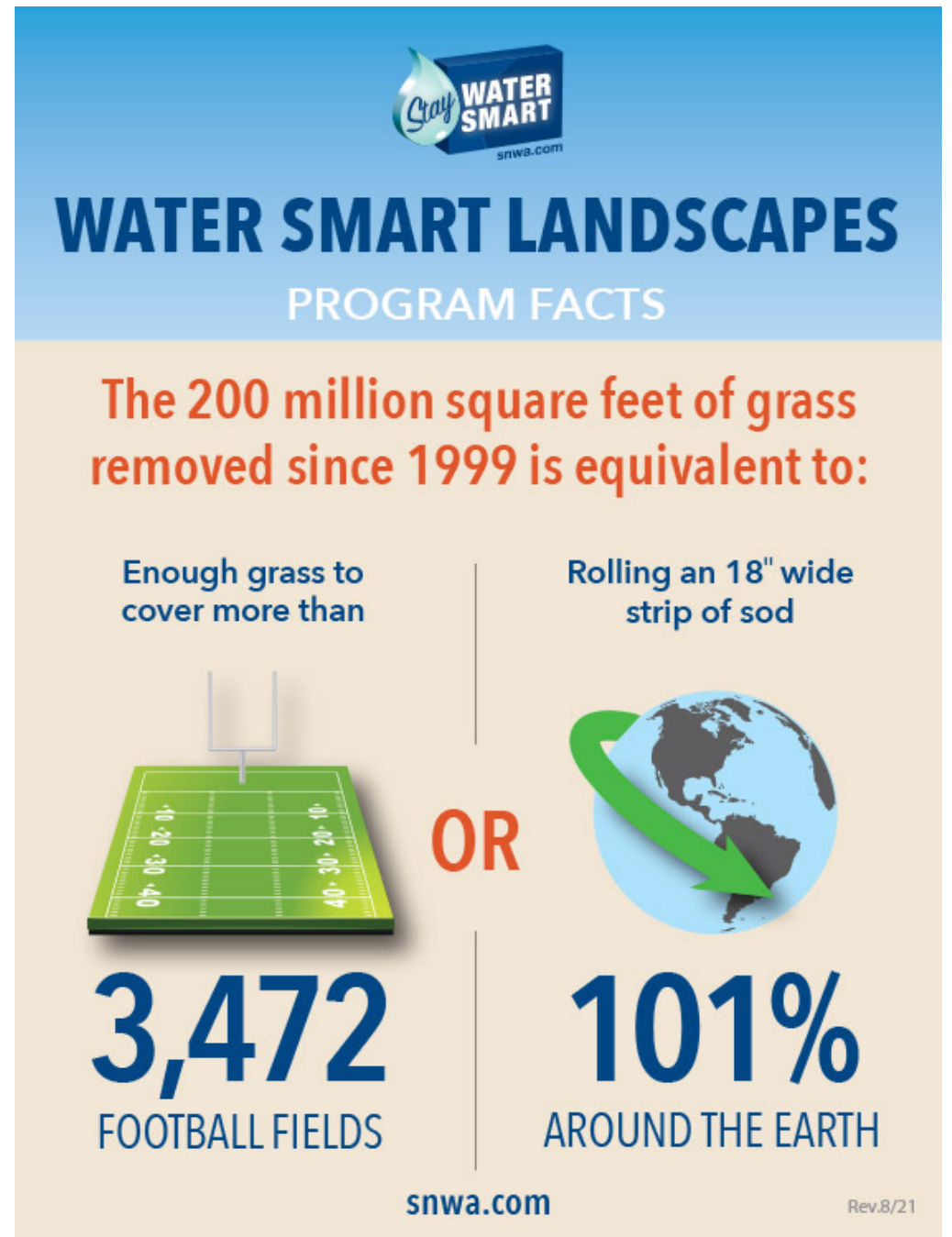
Incentive programs were implemented to encourage water conservation

- Smart Irrigation Controller Rebate
- Water Efficient Technologies Program
- Leak Detector Rebate
- Car Wash Coupons
- Water Smart Landscapes Program



WATER SMART LANDSCAPES

The WSL rebate program has been extremely successful to help reduce the amount of nonfunctional turf in the community.



The infographic features a blue header with the 'Grass WATER SMART snwa.com' logo. Below the header, the title 'WATER SMART LANDSCAPES PROGRAM FACTS' is displayed in blue. The main content area is light beige and contains two columns of information separated by a vertical line. The left column shows an illustration of a football field with yard lines and a goalpost, with the text 'Enough grass to cover more than' above it and '3,472 FOOTBALL FIELDS' below. The right column shows a globe with a green arrow looping around it, with the text 'Rolling an 18" wide strip of sod' above it and '101% AROUND THE EARTH' below. A large red 'OR' is positioned between the two columns. The footer includes 'snwa.com' on the left and 'Rev.8/21' on the right.

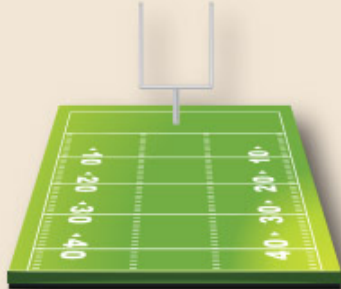
Grass WATER SMART
snwa.com

WATER SMART LANDSCAPES

PROGRAM FACTS

The 200 million square feet of grass removed since 1999 is equivalent to:


Enough grass to cover more than



3,472
FOOTBALL FIELDS

OR

Rolling an 18" wide strip of sod



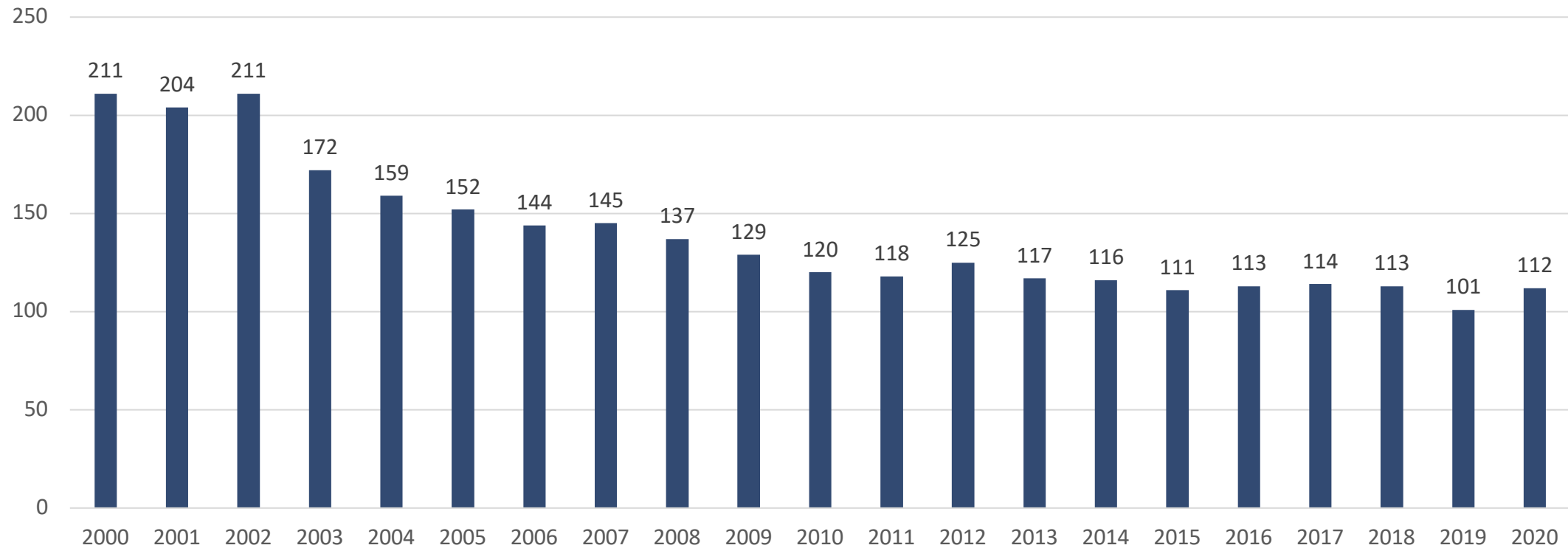
101%
AROUND THE EARTH

snwa.com

Rev.8/21

CONSERVATION RESULTS

While conservation efforts have been successful, conservation progress has stalled. More must be done due to worsening hydrology.





PRESENT DAY

Ongoing drought conditions have led to significant declines in Lake Mead storage.

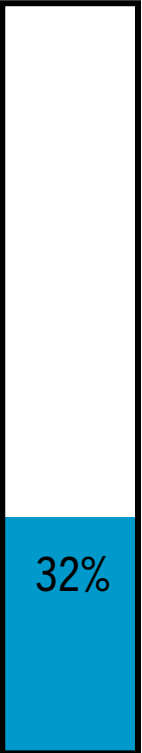
1999



2004




2022



WATER SHORTAGE

First federally declared water shortage projected for Lake Mead



A bathing ring of light trails destined the high water mark on Lake Mead Recreation Area near Boulder City in August 2020. (AP Photo/John Locher)

By Blake Appar Las Vegas Review-Journal
April 24, 2021 - 9:55 pm

Don't miss the big stories. Like us on Facebook.

Updated April 22, 2021 - 12:30 pm

Lake Mead is still expected to experience a water shortage next year, a recently released federal report says. Projections released by the U.S. Bureau of Reclamation at the end of this year reveal that the lake's water level will decline about 140 feet since 2000 and now sits at just 37% of full capacity.

First-ever Colorado River water shortage is now almost certain, new projections show


By Pedram Javaheri and Drew Kann, CNN
Updated 2:47 PM ET, Thu May 27, 2021



Lake Mead, the largest reservoir in the US and a critical water supply for millions across the Southwest, has declined about 140 feet since 2000 and now sits at just 37% of full capacity.

U.S. West prepares for a first-ever water shortage declaration

Los Angeles Times



CORONAVIRUS, VACCINES AND PANDEMIC >

Many experts say to keep masks on, as pushback to CDC ruling intensifies

For teenagers, vaccinations are a ticket to freedom. Some parents still not sure

Sanoft and GSK say their COVID-19 vaccine strongly protects adults in early trials

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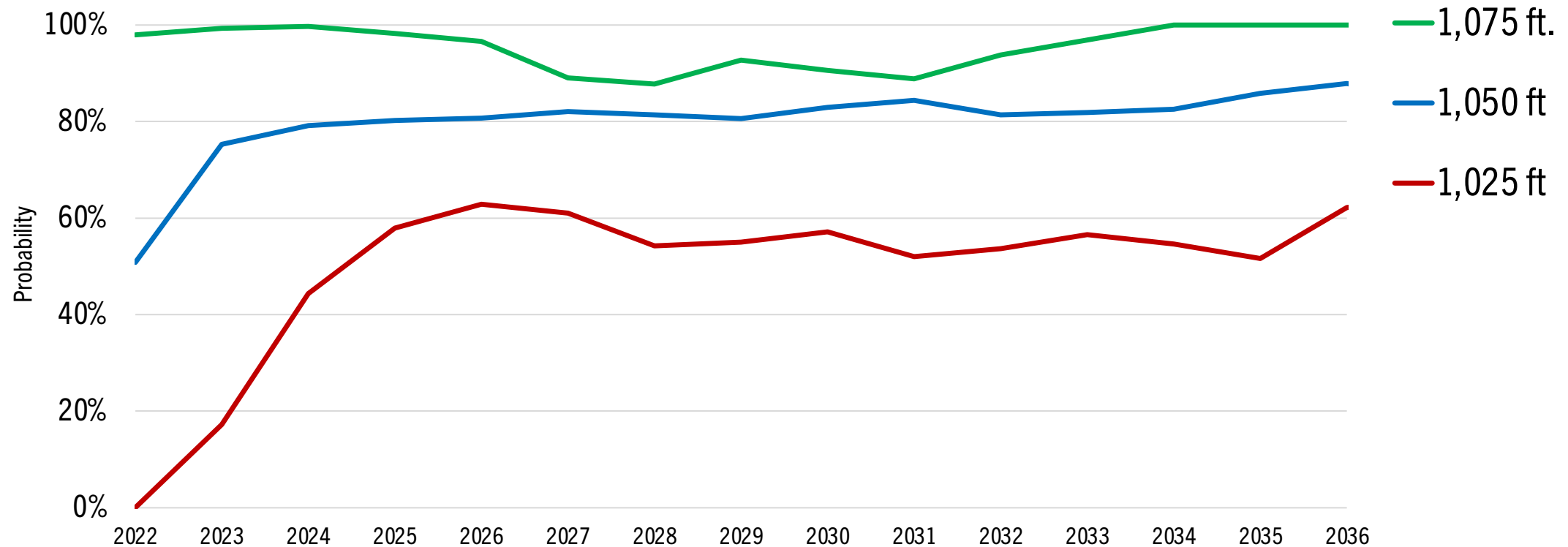
The federally-declared water shortage punctuates the need to keep conserving.

LAKE MEAD SHORTAGE LEVELS

Lake Mead Elevation	Shortage Reduction	Available
1,090+ feet	0	300,000 AFY
1,075 – 1,090 feet	-8,000 AF	292,000 AFY
1,050 – 1,075 feet	-21,000 AF	279,000 AFY
1,045 – 1,050 feet	-25,000 AF	275,000 AFY
1,025 – 1,045 feet	-27,000 AF	273,000 AFY
< 1,025 feet	-30,000 AF	270,000 AFY

LAKE MEAD ELEVATION PROBABILITIES

Lake Mead's elevations could fall below 1,050 feet as early as 2023.



WATER USE

Warming climates add additional challenges in reducing water use.

Climate Change & Aging System

Increasing consumptive water demands due to warmer temperatures, drier soils, lower precipitation, and increased system loss due to aging infrastructure.



86 GPCD
Conservation Goal

Adaptive Management

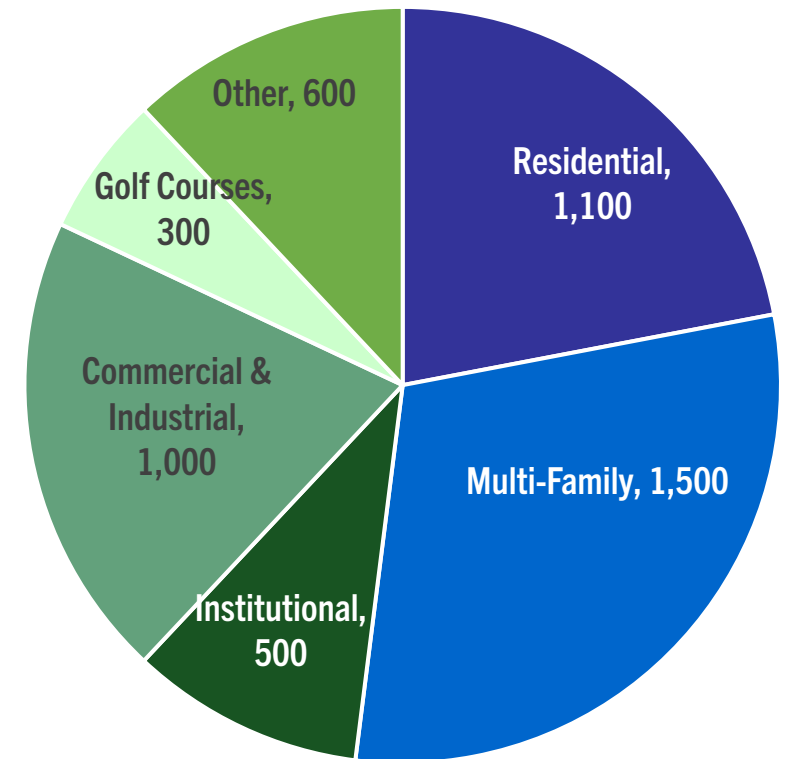
Significant additional effort will be required to reduce consumptive water use to meet our conservation goal and maximize the availability of water supplies.

NONFUNCTIONAL TURF PROHIBITED

A bill passed at the Nevada State Legislature prohibits Colorado River water from being used to water nonfunctional turf by 2027.

- Single-family residential exempt
- 3,900 acres
- 9.5 billion gallons annual savings

**Non-Functional Turf
Eligible for Removal (Acres)**



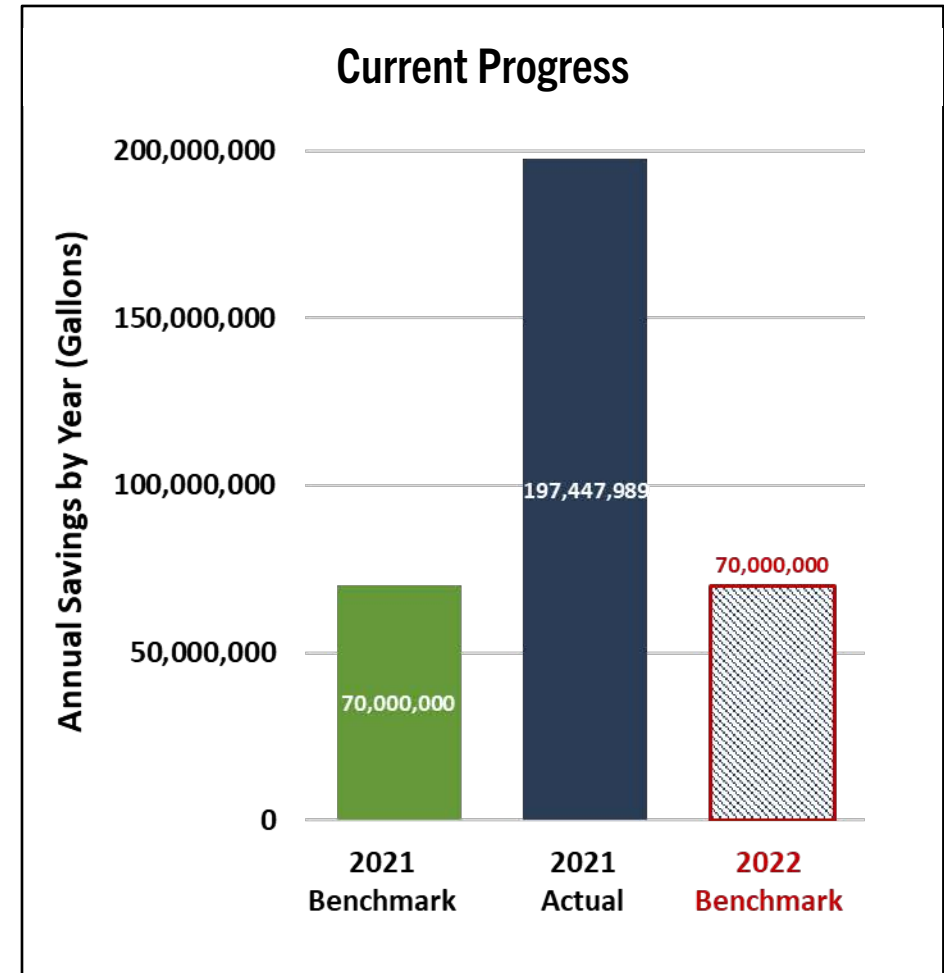
Nonfunctional Turf: Medians, streetscapes, sloped grass, neighborhood entrances or other areas where grass cannot be safely accessed or efficiently used/managed.

WATER EFFICIENT TECHNOLOGIES

SNWA offers rebates to businesses that pilot or install technologies to reduce onsite water use.

Pre-approved technologies include:

- High-efficiency toilet retrofits
- Efficient showerhead retrofits
- Waterless and high-efficiency urinal retrofits
- Converting a sports field from grass to an artificial surface
- Retrofitting standard cooling towers with high-efficiency drift-eliminating technologies



WET Program participants completed 52 projects in 2021, saving an estimated 197 million gallons of water.

NO NEW GOLF COURSES

The Las Vegas Valley Water District will not provide municipal water service to new golf courses in its service area.



NO NEW TURF

A recently-approved resolution will prohibit new installations of turf outside of schools, parks and cemeteries.



ENDING CONSUMPTIVE USE AT SEPTIC SYSTEMS

When Colorado River water is delivered to a property with a septic system, it cannot be treated and reused.

The Las Vegas Valley Water District will not provide municipal water service to properties with a septic system.



LIMIT POOL SIZES

Some area pools exceed 3,000 square feet and evaporate more than 145,000 gallons of water per year.

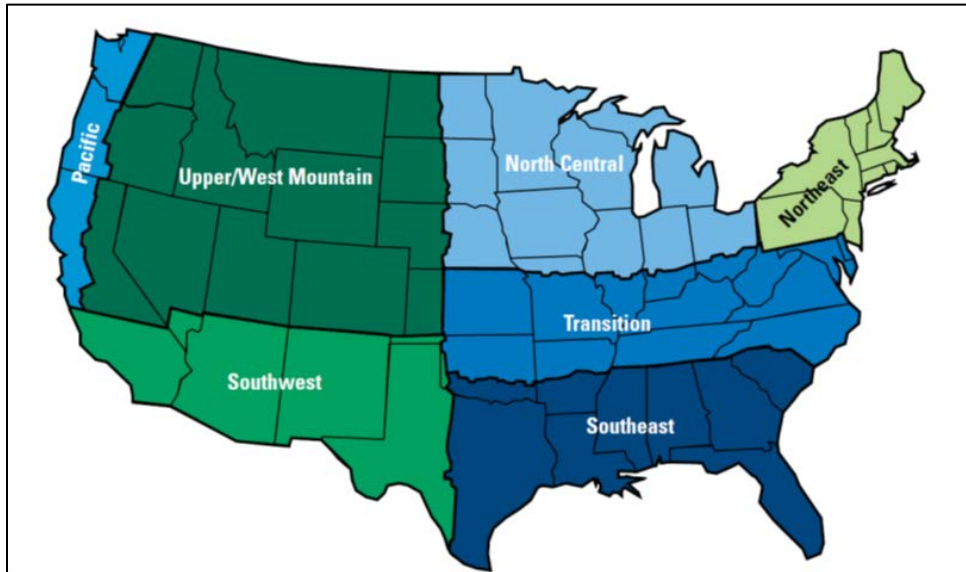
Reducing pool size will reduce wasteful development practices and reduce consumption due to evaporation.



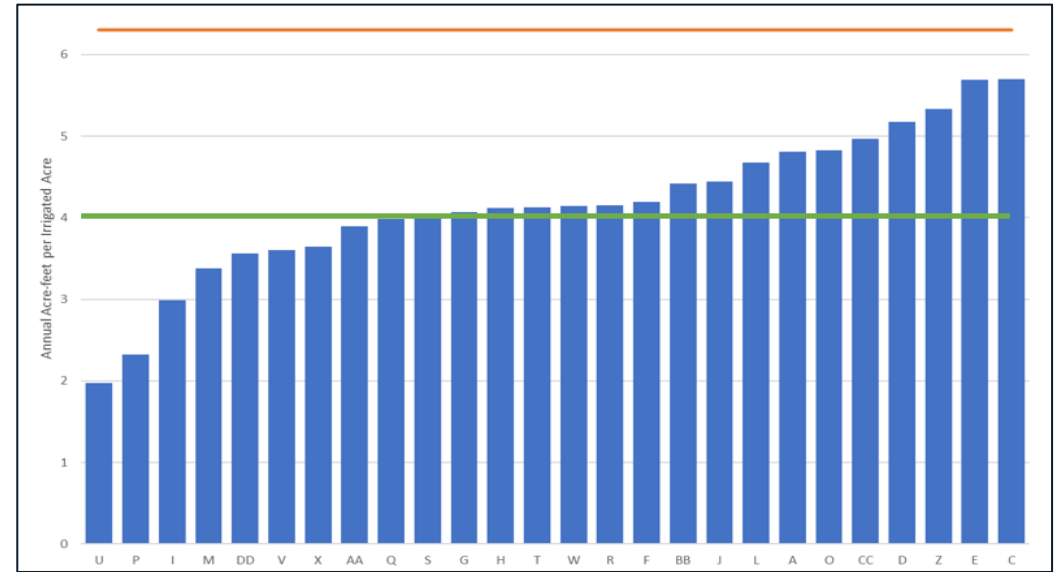
GOLF COURSE WATER BUDGETS

Most golf courses are using below their water budget.

Reducing the golf course water budgets to 4 acre-feet of water per irrigated acre will keep the industry more sustainable.



The average Southwest course is using 4 acre-feet/acre.
The average Southern Nevada course is using 4.1 acre-feet/acre.



— Current Budget (6.3 AF/Acre) ■ Average 2016-2020 AF/Acre
— Proposed Budget (4.0 AF/Acre)

EVAPORATIVE COOLING MORATORIUM

Behind irrigation, evaporative cooling represents the largest consumptive water use.

An approved moratorium will limit cooling towers and water-cooled HVAC systems.

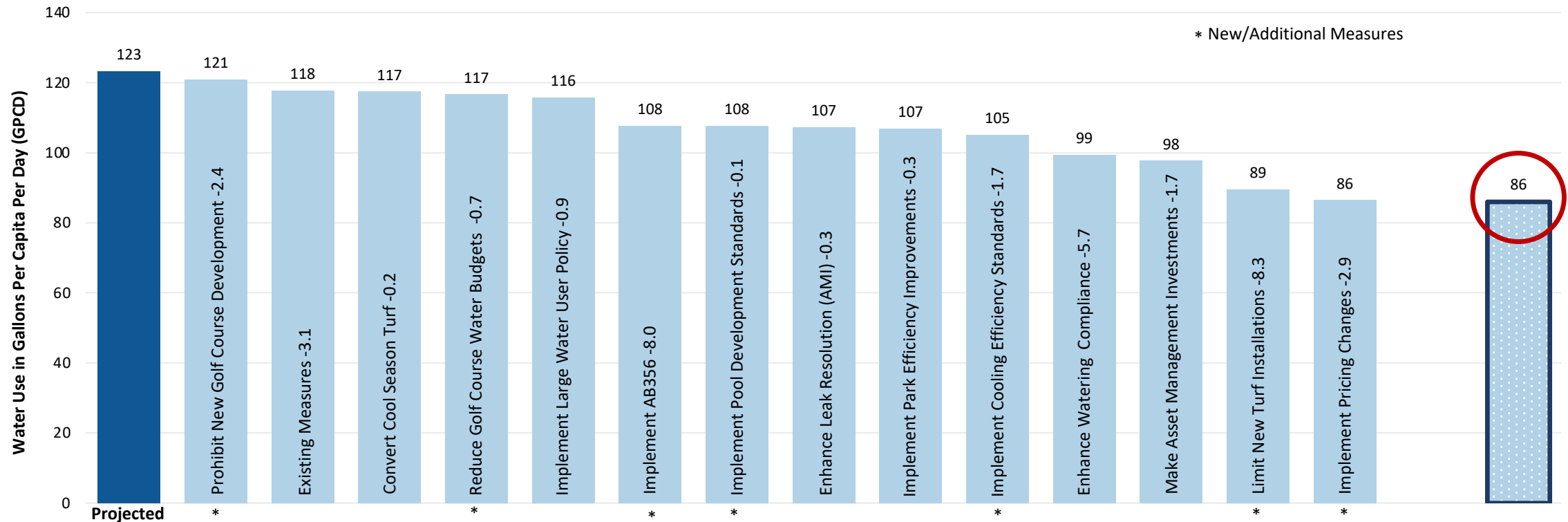


LARGE WATER USER POLICY

When implemented, a large water users' policy will effectuate measures that reduce, mitigate or prohibit the consumptive use of the community's largest water users.



Achieving higher levels of efficiency will extend the availability of current resources and reduce the need for temporary and future resources.





**SOUTHERN NEVADA
WATER AUTHORITY®**